

Appl. No. 10/620,636
Amdt Dated Nov. , 2005
Reply to Office Action August 25, 2005

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A cooling device utilizing liquid coolant, comprising:

a tank comprising a plurality of parallel inner walls therein thereby defining a through channel for passage of the liquid coolant, a plurality of pins being disposed in the channel merely around a center portion of the tank, the tank further comprising a base and two pairs of sidewalls perpendicularly extending from the base and surrounding the inner walls, the inner walls extending alternately from one of the sidewalls and an opposite sidewall, the inner walls being substantially uniformly spaced apart, a distance between a free end of each of the inner walls and a corresponding opposite sidewall being substantially equal to a distance between any two adjacent inner walls;

an inlet and an outlet formed at the tank and disposed at opposite ends of the channel for entry and exiting of the liquid coolant into and from the tank;
and

a cover hermetically sealing the tank.

Claims 2-10 (canceled)

Claim 11 (previously presented): A cooling device comprising:

a tank including a base which defines holes at periphery thereof for positioning of the tank;

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a cover sealing the tank opposite to said base;
a horizontal sinuous channel defined in the tank;
working liquid filled in the channel; and
a plurality of small protrusions disposed in the channel for not only increasing heat transfer area between the working liquid and the tank but also resulting in turbulence for enhancement of heat exchange between the working liquid and the tank.

Claim 12 (original): The cooling device of claim 11, wherein said tank includes opposite inlet and outlet respectively communicatively connected to two opposite ends of the channel.

Claim 13 (original): The cooling device of claim 12, wherein the outlet and the inlet are substantially located on a periphery of the tank while the small protrusions are located around a center portion of the tank.

Claim 14 (original): The cooling device of claim 11, wherein said cover is not integrally formed with the tank.

Claim 15 (original): The cooling device of claim 11, wherein said small protrusions extend from the base.

Claim 16 (original): The cooling device of claim 11, wherein said tank includes a plurality of inner walls forming said sinuous channel.

Claim 17 (original): The cooling device of claim 11, wherein said small

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protrusions are pins.

Claim 18 (canceled)

Claim 19 (previously presented): The cooling device of claim 12, wherein the inlet and the outlet extend outwardly from opposite extremities of the channel and along a direction parallel to the base.

Claim 20 (previously presented): A cooling device comprising:
a tank including a planar base adapted to be in contact with a heat source;
a cover sealing the tank opposite to said base;
a horizontal sinuous channel defined in the tank;
working liquid filled in the channel; and
a plurality of small protrusions disposed in and along at least a portion of the channel for not only increasing heat transfer area between the working liquid and the tank but also resulting in turbulence for enhancement of heat exchange between the working liquid and the tank; wherein
said protrusions extends from one of said base and said cover toward the other, and the working liquid moves from a front end of said sinuous channel to a rear end of the sinuous channel.

Claim 21 (previously presented) The cooling device as described in claim 20, wherein said protrusions contact and terminates at the other.